

The causal link between self-reported trauma and dissociation: A critical review

Citation for published version (APA):

Merckelbach, H. L. G. J., & Muris, P. E. H. M. (2001). The causal link between self-reported trauma and dissociation: A critical review. *Behaviour Research and Therapy*, 39(3), 245-254.
[https://doi.org/10.1016/S0005-7967\(99\)00181-3](https://doi.org/10.1016/S0005-7967(99)00181-3)

Document status and date:

Published: 01/01/2001

DOI:

[10.1016/S0005-7967\(99\)00181-3](https://doi.org/10.1016/S0005-7967(99)00181-3)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.



PERGAMON

Behaviour Research and Therapy 39 (2001) 245–254

**BEHAVIOUR
RESEARCH AND
THERAPY**

www.elsevier.com/locate/brat

The causal link between self-reported trauma and dissociation: a critical review

Harald Merckelbach ^{*}, Peter Muris

Department of Psychology, Maastricht University, Maastricht, The Netherlands

Received in revised form 2 December 1999

Abstract

The idea that traumatic experiences cause dissociative symptoms is a recurrent theme in clinical literature. The present article summarizes evidence that cast doubts on the commonly voiced view that the connection between self-reported trauma and dissociation is a simple and robust one. It is argued that: (1) the correlations between self-reported traumatic experiences and dissociative symptoms reported in the literature are, at best, modest; (2) other factors may act as a third variable in the relationship between trauma and dissociation; and (3) high scores on the Dissociative Experiences Scale are accompanied by fantasy proneness, heightened suggestibility, and susceptibility to pseudomemories. These correlates of dissociation may promote a positive response bias to retrospective self-report instruments of traumatic experiences. Thus, the possibility that dissociation encourages self-reported traumatic experiences rather than vice versa merits investigation. While attractive, simple models in which trauma directly causes dissociation are unlikely to be true. © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Dissociative experiences; Trauma; Fantasy proneness; Memory

1. Introduction

According to Bernstein and Putnam (1986, p. 727), “dissociation is the lack of normal integration of thoughts, feelings, and experiences into the stream of consciousness and memory”. A similar definition of dissociation can be found in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994). DSM-IV considers phenomena like derealization, depersonalization, and psychogenic amnesia as examples of dissociation. One widely used measure for assessing such symptoms is the Dissociative Experiences Scale (DES;

^{*} Corresponding author Tel.: +31-43-3881945; fax: +31-43-3615735.

E-mail address: h.merckelbach@psychology.unimaas.nl (H. Merckelbach).

Bernstein & Putnam, 1986), a self-report scale that asks respondents to what extent they experience 28 dissociative phenomena. Illustrative examples of DES items are: “Some people have the experience of finding themselves in a place and having no idea how they got there. Mark the line to show what percentage of the time this happens to you” and “Some people have the experience of not being sure whether things that they remembering happening really did happen or whether they just dreamed them. Mark the line to show what percentage of the time this happens to you”. Respondents indicate on 100-mm visual analog scales the frequency with which they experience the phenomena described by the items. Scores are then averaged across items to obtain a mean DES score.

A recurrent theme in clinical literature is that traumatic experiences cause dissociative symptomatology. For example, Putnam, Carlson, Ross, Anderson, Clark, Torem, Bowman, Coons, Chu, Dill, Loewenstein, and Braun (1996, p. 673) claim that “numerous clinical studies have established that elevated levels of dissociation are significantly associated with histories of antecedent trauma”. Likewise, Van der Kolk, Pelcovitz, Roth, Mandel, McFarlane, and Herman (1996, p. 85) conclude that “numerous studies have demonstrated a strong relation between trauma and dissociative symptoms”. Referring to the work of Chu and Dill (1990) and Saxe, Van der Kolk, Berkowitz, Chinman, Hall, Lieberg, and Schwartz (1993), these authors then go on to argue that “two studies examining the psychological profiles of patients with high scores on the Dissociative Experiences Scale found that the scale scores were highly correlated with reported childhood histories of trauma”.

The authors cited above also provide a clear rationale for why trauma generates dissociation. They conceptualize dissociation as an initially adaptive response to traumatic events (e.g., Putnam, 1989; Classen, Koopman, & Spiegel, 1993). More specifically, dissociation would promote the compartmentalization of traumatic experiences and, thus, reduce their impact. By this view, a chronic reliance on dissociative defenses as a way of coping with stressful events would contribute to psychopathology (e.g., Van der Kolk & Fisler, 1995).

As Frankel (1996) pointed out, the commonly voiced view that there exists a robust and direct link between trauma and dissociation is attractive because of its elegant simplicity. It is important, though, to emphasize that the primary source of evidence for this view comes from cross-sectional studies that obtained both self-reports of traumatic experiences and DES scores in clinical or nonclinical samples. The present article critically evaluates this type of study. It is structured as follows. The first section briefly summarizes studies that have looked at the associations between trauma and dissociation as well as studies that have identified factors that may modulate these associations. The second section reviews studies that explored the psychological correlates of dissociation. Over the past few years, our knowledge of these correlates has increased considerably. Some of these correlates (e.g., fantasy proneness) are especially relevant because they may undermine the accuracy of retrospective measures of self-reported trauma. The third and final section concludes that the link between trauma and dissociation may be more complex than many clinicians have proposed. In particular, the possibility that dissociation acts as an antecedent of self-reported trauma warrants serious attention.

Even a quick literature search shows that since 1980, hundreds of articles about trauma and dissociation have been published. We do not attempt to provide an exhaustive review of this burgeoning literature. Instead, we focus on individual studies that we believe to be exemplary for this domain of research.

2. The link between trauma and dissociation

A number of clinical studies noted significant correlations between self-reported traumatic events and dissociation as indexed by the DES. For example, Zlotnick, Shea, Pearlstein, Simpson, Costello, and Begin (1996) reported a correlation of 0.40 between a self-reported history of childhood sexual abuse and scores on the DES in a sample of 148 female psychiatric inpatients. This co-occurrence of dissociation and trauma self-reports has been documented for various patients groups (e.g., Engel, Walker, & Katon, 1996; Chu, Frey, Ganzel, & Matthews, 1999). However, as several authors (e.g., Pope & Hudson, 1995; Mulder, Beautrais, Joyce, & Fergusson, 1998) have pointed out, such clinical findings should be interpreted with caution. It may well be the case that individuals with dissociative symptoms and a history of childhood abuse are more likely to enter treatment programs than people who display dissociative symptoms, but have no history of childhood abuse. Furthermore, correlations of the magnitude reported by Zlotnick *et al.* have not been uniformly found. A case in point is a study by DiTomasso and Routh (1993) that relied on a large sample of undergraduate students ($N=312$). Students were asked to complete self-report scales of sexual and physical abuse as well as the DES. The correlation between sexual abuse and the DES was 0.21, while that between physical abuse and the DES was 0.18. Due to the large sample size, these correlations attained significance, but their magnitude is, of course, small. Indeed, the meta-analysis conducted by Rind, Tromovitch, and Bauserman (1998) indicates that such a modest association between self-reported abuse and dissociative symptoms is typical for college samples. Yet, a low (and this time non-significant) correlation between exposure to traumatic experiences and dissociation was even observed in a study concerned with dissociative symptoms of Holocaust survivors (Yehuda, Elkin, Binder-Brynes, Kahana, Southwick, Schmeidler, & Giller, 1996). Accordingly, the authors concluded that “in contrast to current dogma, dissociation in Holocaust survivors is not simply a consequence of having experienced severe trauma” (Yehuda *et al.*, 1996, p. 938).

Nash, Hulsey, Sexton, Harralson, and Lambert (1993) noted in a mixed sample of women with and without psychiatric complaints ($N=105$) that women with a self-reported history of sexual abuse scored significantly higher on dissociation measures than women without such a history. This finding nicely fits with the idea that trauma is an important antecedent of dissociation. However, these authors also observed that the connection between self-reported sexual abuse and dissociation disappears when a measure of family pathology (i.e., respondents’ perceptions of their parents) is entered as a covariate in the analyses. This suggests that the connection between trauma and dissociation may be modulated by family pathology and is more complex than has previously been assumed. A similar conclusion can be drawn from a recent community study by Mulder *et al.* (1998). That study was based on a randomly selected sample of over 1000 individuals. DES as well as data about psychiatric symptoms and childhood abuse were obtained and subjected to logistic regression modeling. The authors found that “any causal influence of childhood sexual abuse on dissociation is likely to be indirect and mediated by more general linkages between childhood sexual abuse and risks of mental disorder” (Mulder *et al.*, 1998, p. 809). Thus, both the Nash *et al.* (1993) and the Mulder *et al.* (1998) findings call into question the simple trauma–dissociation model that is often advocated in clinical literature. A similar point was raised in a recent review by Lilienfeld, Lynn, Kirsch, Chaves, Sarbin, Ganaway, and Powell (1999)

who concluded that the evidence for a straightforward connection between childhood abuse and dissociative disorders is less compelling than previously believed.

Sanders and Giolas (1991) had a group of adolescent psychiatric patients ($N=47$) complete the DES and retrospective self-report measures of abuse and family atmosphere. In line with the DiTomasso and Routh (1993) study, the correlation between sexual abuse and DES was significant, but modest ($r=0.26$). Meanwhile, the correlation between negative family atmosphere and DES was considerably higher ($r=0.50$), a finding that accords well with the Nash *et al.* (1993) results. An interesting aspect of the Sanders and Giolas (1991) study is that these authors had access to the hospital records of the patients (including therapy notes and information concerning family background and history). An expert blind as to the patients' scores on the self-report trauma questionnaire and the DES evaluated these patients records in terms of indications for trauma. Curiously enough, a negative correlation emerged between sexual abuse ratings based on hospital records and DES scores ($r=-0.21$, $p=0.10$).

To sum up, then, the studies cited in this section demonstrate that the connection between trauma and DES is not that robust and uncomplicated as has often been suggested in clinical literature.

3. Dissociation, confabulation and suggestibility

It is worth asking why Sanders and Giolas (1991) found a positive and significant correlation between self-reported sexual abuse and DES and a negative correlation reaching borderline significance between abuse ratings based on hospital records and DES. One distinct possibility that should be considered is that high DES individuals display a positive response bias on retrospective self-report indices of trauma. Evidence consistent with this possibility comes from three separate research lines.

The first research line pertains to individual difference correlates of dissociation. One clearly established individual difference correlate of dissociation is fantasy proneness (e.g., Silva & Kirsch, 1992; Rauschenberg & Lynn, 1995; Merckelbach, Muris, & Rassin, 1999). Fantasy proneness refers to a deep and profound involvement in fantasy and imagination (e.g., Lynn & Rhue, 1988; Wilson and Barber, 1983). Research shows that most fantasy prone individuals are well adjusted persons without overt psychopathology (Lynn & Rhue, 1988). For college students' samples, correlations between DES total scores and fantasy proneness range from 0.42 (Silva & Kirsch, 1992) to 0.63 (Merckelbach *et al.*, 1999). Merckelbach, Muris, Horselenberg, and Stougie (2000a) noted that the significant association between fantasy proneness and DES is not only evident for the particular DES factor that taps relative benign experiences of absorption and imaginative involvement, but also for those DES factors that are thought to be powerful predictors of dissociative psychopathology (i.e., depersonalization–derealization and activities of dissociated states; Ross, Joshi, & Currie, 1991).

The considerable overlap between dissociation and fantasy proneness has important ramifications. Fantasy proneness may compromise the veridicality of retrospective reports of traumatic events (e.g., Rauschenberg & Lynn, 1995; Bryant, 1995). More specifically, fantasy proneness could either lead to a tendency to confuse memories that derive from real autobiographical episodes with those that derive from fantasies or it could lead to the adoption of a liberal criterion

for reporting past events. The first possibility refers to source monitoring problems of the sort described by Johnson, Hashtroudi, and Lindsay (1993). The second possibility refers to a confabulatory tendency or, in other words, a positive response bias of the type described by Roediger, Wheeler, and Rajaram (1993). To examine these alternatives, Merckelbach and colleagues (2000a; Study 1) exposed undergraduates to a series of slides. Some of the slides were photographs of common objects, while others consisted of paragraphs describing an object. During a post-experimental recognition task, subjects had to indicate whether or not they had seen particular items and if so, whether items had been presented as photograph or paragraphs. Thus, two types of errors could occur during the recognition test: source monitoring errors (confusing photographs with paragraphs and vice versa) and false positive response errors (identifying an item as part of the previously seen slide series when it was not). Neither DES scores nor fantasy proneness scores were found to be related to source monitoring errors, a null finding that replicates the negative results of Van den Hout, Merckelbach, and Pool (1996). However, both DES and fantasy proneness were significantly correlated with false positive response errors ($r=0.40$ and $r=0.26$, respectively). That is, high scores on DES and fantasy proneness were accompanied by a raised frequency of false recognition errors. Interestingly, partialling out the contribution of fantasy proneness attenuated the correlation between DES and false positive responses.

In a second experiment, Merckelbach and colleagues (2000a) sought to determine whether the positive response bias of high DES individuals also extends to autobiographical memory. In this study, undergraduate subjects completed a so-called Life Events Inventory (LEI; Garry, Manning, Loftus, & Sherman, 1996), an inventory that consists of a large number of relatively neutral, but highly specific events (e.g., “I went with my school to Disneyland”). Subjects indicated how certain they were that the LEI items had happened to them before the age of 10. Both DES and fantasy proneness were associated with a positive answer tendency on the LEI ($r=0.39$ and $r=0.53$, respectively). Yet, controlling for fantasy proneness reduced the correlation between DES and positive responses on the LEI to practically zero. All in all, these findings suggest that high DES individuals exhibit a positive response bias that is strongly linked to their heightened levels of fantasy proneness. A similar conclusion can be drawn from the work of Johnson, Edman, and Danko (1995) and Irwin (1998). These authors had subjects complete a Bad Things Scale that contained items describing mildly aversive events like “I have been short changed in stores” and “I have helped friends and not been helped in return”. Positive correlations were found between DES and scores on the Bad Things Scale ($r's > 0.40$), which, again, suggests that high DES scores are accompanied by an inclination to report negative events.

A second research line that bears relevance to the idea that high levels of dissociation might be conducive to memory or report biases consists of studies that looked at the relationship between interrogative suggestibility and DES (Ost, Fellows, & Bull, 1997; Merckelbach, Muris, Wessel, & van Koppen, 1998; Wolfradt & Meyer, 1998; Merckelbach, Muris, Rassin, & Horselenberg, 2000b). These studies relied on the Gudjonsson Suggestibility Scale (GSS; Gudjonsson, 1992) which measures subjects' susceptibility to memory or report biases under conditions of post-hoc misinformation and social pressure. Briefly, the GSS consists of a short narrative that is read out to the subject. Next, the subject has to answer a set of questions about the narrative, some of which are misleading and contain misinformation about the narrative. Following this, the subject is told that he/she made many mistakes and that the questions should be answered once again. Thus, two measures can be derived from the GSS: the tendency to give in to misleading questions

(termed Yield) and the tendency to alter accounts as a result of social pressure (termed Shift). DES has been found to correlate with GSS scores, notably with the Yield subscale of the GSS. Pearson product–moment correlations between DES and the Yield subscale range between 0.30 (Merckelbach *et al.*, 2000b) and 0.53 (Wolfradt & Meyer, 1998). This indicates that high DES individuals are susceptible to misleading post-hoc information.

A third research line that should be considered has to do with the experimental analysis of pseudomemories. Hyman and Billings (1998) asked students to recall autobiographical events that had been reported by their parents to the researchers. However, retrieval cues referring to a fictitious event that subjects had never experienced were embedded in the series of true retrieval cues. Subjects were led to believe that the fictitious event had also been supplied by their parents and were encouraged to recall that event. Almost 25% of the subjects created a pseudomemory in response to the fictitious retrieval prompts. Most interestingly, both fantasy proneness and DES were linked to pseudomemory creation ($r=0.36$ and $r=0.48$, respectively), indicating that high scores on fantasy proneness and dissociation reflect a heightened receptivity to pseudomemories. This point is further underlined by studies examining the phenomenon of imagination inflation (Heaps & Nash, 1999; Paddock, Joseph, Chan, Terranova, Manning, & Loftus, 1998). In general, these studies have found that imagining low probability childhood events inflates subjects' confidence that these events actually had occurred, an effect that is more pronounced in subjects with high DES scores. Using a somewhat different approach, Winograd, Peluso, and Glover (1998) demonstrated that DES scores predict the tendency to falsely recognize distracters in a traditional word list memory task. Thus, most studies in this domain support the idea that dissociative subjects tend to adopt a low criterion for accepting a memory as authentic, although exceptions have been reported (e.g., Spanos, Burgess, Burgess, Samuels, & Blois, 1999).

In summary, the studies cited in this section converge on the notion that dissociation is associated with an array of features that may compromise the veridicality of autobiographical accounts. Tillman, Nash, and Lerner (1994, p. 405) summarized the implication of this as follows: “dissociation confounds the accuracy of reports of early trauma, that is, dissociative symptomatology may predispose some patients to confound fantasy, dream, and mnemonic experience”.

4. Conclusion

A burgeoning literature on dissociation and trauma has appeared over the past decade. One recurrent theme in this literature is the idea that traumatic childhood experiences constitute a direct pathway to dissociative symptoms (e.g., Ross, 1997; Classen *et al.*, 1993; Putnam *et al.*, 1996). Studies that found a connection between self-reported traumatic childhood experiences, on the one hand, and high levels of dissociation as indexed by the DES, on the other hand, serve as the major source of evidence for this view. In this review, we made an attempt to explain why this evidence is ambiguous. To begin with, simple trauma–dissociation models assume that there exists a robust linkage between measures of trauma and dissociation, but not all studies have come up with substantial correlations between such measures (e.g., DiTomasso & Routh, 1993). Secondly, simple trauma–dissociation models assume that the causal link between antecedent trauma and dissociation is fairly direct, but some studies have found evidence to suggest that a third variable (i.e., family pathology) may operate in the connection between trauma and dis-

sociation (Nash *et al.*, 1993). Thirdly and most importantly, studies that are cited as evidence for the idea that trauma causes dissociation often relied on the DES, but this measure overlaps with personality features (e.g., fantasy proneness) that may compromise the accuracy of retrospective self-reports of trauma (Merckelbach *et al.*, 2000a).

In their scholarly review, Brewin, Andrews, and Gotlib (1993) argued that the unreliability of retrospective self-report instruments should not be exaggerated. However, it seems self-evident that due to certain personality traits, some people are less accurate in their self-reports of autobiographical childhood events than are other people. This may be especially true for traits like fantasy proneness and suggestibility. The by now well-established fact that the DES strongly correlates with these traits has important ramifications for our understanding of the causal links between trauma and dissociation. More specifically, these correlates of the DES suggest the possibility that high dissociation may lead to an overreporting of traumatic incidents. Consistent with this is the finding that high DES scores are not only related to self-reports of childhood trauma, but also to reports of supernatural experiences (e.g., telepathy, precognition etc.; Ross & Joshi, 1992). For example, Wolfradt (1997) found strong associations between certain forms of paranormal belief (e.g., superstition and spiritualism) and DES. One could argue, of course, that a history of childhood trauma may give rise to dissociative symptoms, suggestibility, and fantasy proneness, with the latter manifesting itself in paranormal experiences and beliefs (e.g., Ross & Joshi, 1992; Lawrence, Edwards, Barraclough, Church, & Hetherington, 1995). Still, the fact remains that both suggestibility and fantasy proneness may undermine the accuracy of self-reported childhood traumas. Thus, a rigorous test of the idea that childhood trauma is responsible for a whole spectrum involving dissociation, suggestibility, and fantasy proneness would require studies that seek independent verification of childhood trauma. To the present authors' knowledge such studies have not yet been undertaken, one possible exception being the study of Sanders and Giolas (1991) who reported results that are difficult to accommodate by a simple trauma–dissociation model (cf. *supra*). Thus, in the final analysis, the connection between self-reported trauma and dissociation is open to multiple interpretations. The hypothesis that trauma causes dissociation provides only one interpretation, an interpretation for that matter that awaits further empirical testing (e.g., Van IJzendoorn & Schuengel, 1996; Frankel, 1990, 1996; Hacking, 1995).

Three final comments are in order. First, some authors (e.g., Ross, 1997) have recommended the DES as a screening instrument for severe dissociative pathology (e.g., dissociative identity disorder). Yet, a study of Sandberg and Lynn (1992) demonstrated that only a small minority (6%) of individuals scoring in the upper 15% of the DES meet the criteria for a dissociative disorder. These authors concluded that “the DES, when used with nonclinical samples, is likely to yield a large number of false positives for dissociative disorders” (Sandberg & Lynn, 1992, p. 722). On the basis of studies reviewed above, it is easy to see why this is the case: the overlap between the DES and relatively benign traits such as fantasy proneness is considerable. Aside from its association with fantasy proneness, the DES has been found to be linked to cognitive failures ($r=0.53$; Merckelbach *et al.*, 1999), neuroticism ($r=0.48$; De Silva & Ward, 1993; see also Holtgraves & Stockdale, 1997; Irwin, 1998), state anxiety ($r=0.66$; Wolfradt & Meyer, 1998), trait anxiety ($r=0.75$; Wolfradt & Meyer, 1998), and schizotypy ($r=0.57$; Bauer & Power, 1995; see also Irwin, 1998). Thus, it is fair to conclude that the DES taps a wide diversity of traits that do not necessarily possess a pathological quality (e.g., Hacking, 1995; Frankel, 1990, 1996). Apart from its ramifications for clinical decision making, this point raises fundamental questions about

the manner in which the DES operationalizes the construct of pathological dissociation (see, for an analysis of this type of problem, Nicholls, Licht, & Pearl, 1982).

Secondly, a number of recent studies (e.g., Titchenor, Marmar, Weiss, Metzler, & Ronfeldt, 1996) found that dissociative reactions at the time of trauma (i.e., peritraumatic dissociation) are predictive of the subsequent development of Post Traumatic Stress Disorder (PTSD) symptomatology. However, as these studies heavily relied on retrospective reports of dissociation and PTSD symptomatology, their results are open to alternative interpretations. One of them is that established correlates of dissociation (e.g., fantasy proneness) contribute to the connection between peritraumatic dissociation and self-reported PTSD symptoms.

A third and final remark has to do with concurrent measures of dissociation. Over the past few years, new dissociation measures have been developed and published (e.g., Vanderlinden, Van Dyck, Vandereycken, & Vertommen, 1991; Nijenhuis, Spinhoven, Vanderlinden, Van Dijck, & Van der Hart, 1998). It is difficult to evaluate whether these new measures have any additional value over and above the DES until studies have explored their intercorrelations with fantasy proneness, cognitive failures, neuroticism, anxiety, and schizotypy. To the extent that the new dissociation measures do correlate with these traits, they also suffer from the problematic features that were addressed in the current article.

References

- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders*. (4th ed.). Washington, DC: APA.
- Bauer, A. M., & Power, K. G. (1995). Dissociative experiences and psychopathological symptomatology in a Scottish sample. *Dissociation*, 8, 209–219.
- Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease*, 174, 727–735.
- Brewin, C. R., Andrews, B., & Gotlib, I. H. (1993). Psychopathology and early experience: A reappraisal of retrospective reports. *Psychological Bulletin*, 113, 82–98.
- Bryant, R. A. (1995). Fantasy-proneness and recall of childhood abuse. In G. D. Burrows, & R. O. Stanley, *Contemporary International Hypnosis* (pp. 109–117). New York: Wiley.
- Chu, J. A., & Dill, D. L. (1990). Dissociative symptoms in relation to childhood physical and sexual abuse. *American Journal of Psychiatry*, 147, 887–892.
- Chu, J. A., Frey, L. M., Ganzel, B. L., & Matthews, J. A. (1999). Memories of childhood abuse: Dissociation, amnesia, and corroboration. *American Journal of Psychiatry*, 156, 749–755.
- Classen, C., Koopman, C., & Spiegel, D. (1993). Trauma and dissociation. *Bulletin of the Menninger Clinic*, 27, 178–194.
- De Silva P., & Ward, A. J. M. (1993). Personality correlates of dissociative experiences. *Personality and Individual Differences*, 14, 857–859.
- DiTomasso, M. J., & Routh, D. K. (1993). Recall of abuse in childhood and three measures of dissociation. *Child Abuse & Neglect*, 17, 477–485.
- Engel, C. C., Walker, E. A., & Katon, W. J. (1996). Factors related to dissociation among patients with gastrointestinal complaints. *Journal of Psychosomatic Research*, 40, 643–653.
- Frankel, F. H. (1990). Hypnotizability and dissociation. *American Journal of Psychiatry*, 147, 823–829.
- Frankel, F. H. (1996). Dissociation: The clinical realities. *American Journal of Psychiatry (Festschrift Supplement)*, 153, 64–70.
- Garry, M., Manning, C. G., Loftus, E. F., & Sherman, S. J. (1996). Imagination inflation: Imagining a childhood event inflates confidence that it occurs. *Psychonomic Bulletin & Review*, 3, 208–214.

- Gudjonsson, G. H. (1992). *The psychology of interrogations, confessions, and testimony*. Chichester: Wiley.
- Hacking, I. (1995). *Rewriting the soul: Multiple personality and the sciences of memory*. New Jersey: Princeton.
- Heaps, C., & Nash, M. (1999). Individual differences in imagination inflation. *Psychonomic Bulletin & Review*, 6, 313–318.
- Holtgraves, T., & Stockdale, G. (1997). The assessment of dissociative experiences in a non-clinical population: Reliability, validity, and factor structure of the dissociative experiences scale. *Personality and Individual Differences*, 22, 699–706.
- Hyman, I. E., & Billings, F. J. (1998). Individual differences and the creation of false memories. *Memory*, 6, 1–20.
- Irwin, H. J. (1998). Dissociative tendencies and the sitting duck: Are self-reports of dissociation and victimization symptomatic of neuroticism? *Journal of Clinical Psychology*, 54, 1005–1015.
- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, 114, 3–28.
- Johnson, R. C., Edman, J. L., & Danko, G. P. (1995). Self reported negative experiences and dissociation. *Personality and Individual Differences*, 18, 793–795.
- Lawrence, T., Edwards, C., Barraclough, N., Church, S., & Hetherington, F. (1995). Modelling childhood causes of paranormal belief and experience: Childhood trauma and childhood fantasy. *Personality and Individual Differences*, 19, 209–215.
- Lilienfeld, S. O., Lynn, S. J., Kirsch, I., Chaves, J. F., Sarbin, T. R., Ganaway, G. K., & Powell, R. A. (1999). Dissociative identity disorder and the sociocognitive model: Recalling the lessons of the past. *Psychological Bulletin*, 125, 507–523.
- Lynn, S. J., & Rhue, J. W. (1988). Fantasy proneness: Hypnosis, developmental antecedents, and psychopathology. *American Psychologist*, 43, 350–444.
- Merckelbach, H., Muris, P., Horselenberg, R., & Stougie, S. (2000a). Dissociation, reality monitoring, and response bias. *Personality and Individual Differences*, 28, 49–58.
- Merckelbach, H., Muris, P., Rassin, E., & Horselenberg, R. (2000b). Dissociative experiences and interrogative suggestibility in college students. *Personality and Individual Differences* (in press)
- Merckelbach, H., Muris, P., & Rassin, E. (1999). Fantasy proneness and cognitive failures as correlates of dissociative experiences. *Personality and Individual Differences*, 26, 961–967.
- Merckelbach, H., Muris, P., Wessel, I., & van Koppen, P. J. (1998). The Gudjonsson Suggestibility Scale (GSS): Further data on its reliability, validity, and metacognition correlates. *Social Behavior and Personality*, 26, 203–210.
- Mulder, R. T., Beautrais, A. L., Joyce, P. R., & Fergusson, D. M. (1998). Relationship between dissociation, childhood sexual abuse, childhood physical abuse, and mental illness in a general population sample. *American Journal of Psychiatry*, 155, 806–811.
- Nash, M. R., Hulse, T. L., Sexton, M. C., Harralson, T. L., & Lambert, W. (1993). Long-term sequelae of childhood sexual abuse: perceived family environment, psychopathology, and dissociation. *Journal of Consulting and Clinical Psychology*, 61, 276–283.
- Nicholls, J. G., Licht, B. G., & Pearl, R. A. (1982). Some dangers of using personality questionnaires to study personality. *Psychological Bulletin*, 92, 572–580.
- Nijenhuis, E. R. S., Spinhoven, P., Vanderlinden, J., Van Dijck, R., & Van der Hart, O. (1998). Somatoform dissociative symptoms as related to animal defensive reactions to predatory imminence and injury. *Journal of Abnormal Psychology*, 107, 63–73.
- Ost, J., Fellows, B., & Bull, R. (1997). Individual differences and the suggestibility of human memory. *Contemporary Hypnosis*, 14, 132–137.
- Paddock, J. R., Joseph, A. L., Chan, F. M., Terranova, S., Manning, C., & Loftus, E. F. (1998). When guided visualization may backfire: Imagination inflation and predicting individual differences in suggestibility. *Applied Cognitive Psychology (Supplement)*, 12, 63–75.
- Pope, H. G., & Hudson, J. I. (1995). Does childhood sexual abuse cause adult psychiatric disorders? Essentials of methodology. *Journal of Psychiatry & Law*, 23, 363–381.
- Putnam, F. W. (1989). Pierre Janet and modern views of dissociation. *Journal of Traumatic Stress*, 2, 413–429.
- Putnam, F. W., Carlson, E. B., Ross, C. A., Anderson, G., Clark, P., Torem, M., Bowman, E. S., Coons, P. H., Chu, J. A., Dill, D. L., Loewenstein, R. J., & Braun, B. G. (1996). Patterns of dissociation in clinical and nonclinical samples. *Journal of Nervous and Mental Disease*, 184, 673–679.

- Rauschenberg, S. L., & Lynn, S. J. (1995). Fantasy proneness, DSM-III-r axis I psychopathology, and dissociation. *Journal of Abnormal Psychology, 104*, 373–380.
- Rind, B., Tromovitch, P., & Bauserman, R. (1998). A meta-analytic examination of assumed properties of child sexual abuse using college samples. *Psychological Bulletin, 124*, 22–53.
- Roediger, H. L. III, Wheeler, M. A., & Rajaram, S. (1993). Remembering, knowing and reconstructing the past. In D. L. Medin, *The Psychology of learning and motivation: Advances in theory and research* (pp. 97–103). New York: Academic Press.
- Ross, C. A. (1997). *Dissociative identity disorder: Diagnosis, clinical features, and treatment of multiple personality*. New York: Wiley.
- Ross, C. A., & Joshi, S. (1992). Paranormal experiences in the general population. *Journal of Nervous and Mental Disease, 180*, 357–361.
- Ross, C. A., Joshi, S., & Currie, R. (1991). Dissociative experiences in the general population: A factor analysis. *Hospital and Community Psychiatry, 42*, 297–301.
- Sandberg, D. A., & Lynn, S. J. (1992). Dissociative experiences, psychopathology and adjustment, and child and adolescent maltreatment in female college students. *Journal of Abnormal Psychology, 101*, 717–723.
- Sanders, B., & Giolas, M. H. (1991). Dissociation and childhood trauma in psychologically disturbed adolescents. *American Journal of Psychiatry, 148*, 50–54.
- Saxe, G. N., Van der Kolk, B. A., Berkowitz, M. D., Chinman, G., Hall, K., Lieberg, G., & Schwartz, J. (1993). Dissociative disorders in psychiatric inpatients. *American Journal of Psychiatry, 150*, 1037–1042.
- Silva, C. E., & Kirsch, I. (1992). Interpretive sets, expectancy, fantasy proneness, and dissociation as predictors of hypnotic response. *Journal of Personality and Social Psychology, 63*, 847–856.
- Spanos, N. P., Burgess, C. A., Burgess, M. F., Samuels, C., & Blois, W. O. (1999). Creating false memories of infancy with hypnotic and non-hypnotic procedures. *Applied Cognitive Psychology, 13*, 201–218.
- Tillman, J. G., Nash, M. R., & Lerner, P. M. (1994). Does trauma cause dissociative psychopathology? In S. J. Lynn, & J. W. Rhue, *Dissociation: Clinical and Theoretical Perspectives* (pp. 395–413). New York: Guilford.
- Titchenor, V., Marmar, C. R., Weiss, D. S., Metzler, T. J., & Ronfeldt, H. (1996). The relationship of peritraumatic dissociation and posttraumatic stress: Findings in female Vietnam theater veterans. *Journal of Consulting and Clinical Psychology, 64*, 1054–1059.
- Van den Hout, M. A., Merckelbach, H., & Pool, K. (1996). Dissociation, reality monitoring, trauma, and thought suppression. *Behavioural and Cognitive Psychotherapy, 24*, 97–108.
- Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of Traumatic Stress, 8*, 505–525.
- Van der Kolk, B. A., Pelcovitz, D., Roth, S., Mandel, F. S., McFarlane, A., & Herman, J. L. (1996). Dissociation, somatization, and affect dysregulation: The complexity of adaptation to trauma. *American Journal of Psychiatry, 153*, 83–93.
- Vanderlinden, J., Van Dyck, R., Vandereycken, W., & Vertommen, H. (1991). Dissociative experiences in the general population in the Netherlands and Belgium. *Dissociation, 4*, 180–184.
- Van Ijzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: Meta-analytic validation of the Dissociative Experiences Scale (DES). *Clinical Psychology Review, 16*, 365–382.
- Wilson, S. C., & Barber, T. X. (1983). Fantasy-prone personality: Implications for understanding imagery, hypnosis, and parapsychological phenomena. In A. A. Sheikh, *Imagery: Current Theory, Research, and Application* (pp. 340–387). New York: Wiley.
- Winograd, E., Peluso, J. P., & Glover, T. A. (1998). Individual differences in susceptibility to memory illusions. *Applied Cognitive Psychology (Supplement), 12*, 5–27.
- Wolfradt, U. (1997). Dissociative experiences, trait anxiety, and paranormal beliefs. *Personality and Individual Differences, 23*, 15–19.
- Wolfradt, U., & Meyer, T. (1998). Interrogative suggestibility, anxiety, and dissociation among anxious patients and normal controls. *Personality and Individual Differences, 25*, 425–432.
- Yehuda, R., Elkin, A., Binder-Brynes, K., Kahana, B., Southwick, S. M., Schmeidler, J., & Giller, E. L. (1996). Dissociation in aging Holocaust survivors. *American Journal of Psychiatry, 153*, 935–940.
- Zlotnick, C., Shea, M. T., Pearlstein, T., Simpson, E., Costello, E., & Begin, A. (1996). The relationship between dissociative symptoms, alexithymia, impulsivity, sexual abuse, and self-mutilation. *Comprehensive Psychiatry, 37*, 12–16.